

DEVELOPING A SCALE TO MEASURE SOCIAL CAPITAL GENERATED AND BUSINESS BENEFITS ON SOCIAL NETWORKING SITES

SUPARNA DHAR & MOHAMMED NAVED KHAN

Aligarh Muslim University

ABSTRACT

Social capital is a manifestation of investment in social relations and benefits therein. It affects individual and organizational performance by facilitating coordination, creativity, leadership, learning, teamwork and trust. Social Networking Sites (SNS) find wide adoption across the globe transforming the way people interact and form social capital. It provides options for information disclosure helping locate people with common interest and maintain ties with a larger network, compared to offline networks broadening scope of bridging social capital. Internet based social networks have transformed the way in which, people socialize and share information ensuing profound implications for businesses. Extant literature on SNS research does not provide a scale to measure social capital generated from SNS use and strategic and operational benefits emanating from it. This paper presents a scale; drawing upon existing scales, to measure social capital generated on SNS, and perceived organizational benefits of SNS use. The scale has been empirically validated on a sample of working professionals in India. The scale reliability and validity was found to be satisfactory, rendering it useful instrument for academic research. Practitioners too can use the scale to measure effectiveness of their SNS implementation strategy.

KEYWORDS: Business Benefit, Scale Definition, Social Capital & Social Networking Site

Received: Dec 01, 2017; **Accepted:** Dec 21, 2017; **Published:** Jan 05, 2018; **Paper Id.:** IJHRMRFEB20181

INTRODUCTION

Organizations subsist, function and succeed (or fail) in a social ecosystem involving multitude of stakeholders, influenced by their social network and the resultant social capital. Social capital is “the ability of actors to secure benefits by virtue of membership in social networks or other social structures” [29]. It is a manifestation of investment in relations in social network and benefits therein [12]. Immense popularity of Internet based social network sites (SNS), such as Face book, LinkedIn and Twitter [22], have transformed the way in which people socialize and share information [20][23]. These sites have become a regular medium for communication and collaboration for millions of users dispersed worldwide [4]. Young individuals are inclined more towards online SNS platforms [9] rendering adoption of SNS platforms unavoidable medium of communication in foreseeable future.

Organizational impact emanating from the social upheaval caused by SNS is unavoidable and immense. Organizations can channelize it in their favor by carefully drawing up SNS adoption strategy [7] or bear the brunt. Organizations need to strategize, implement and manage their SNS program. To quantify SNS outcomes, they need a scale to objectively measure the benefits generated by their SNS program(s).

This paper, suggests a scale to measure the social capital and business benefits generated on SNS. The attitudinal scale has been developed by borrowing constructs from previously defined and validated scales.

The new scale, namely, “**Social Capital and Benefits from SNS Scale**” or “**SCB-SNS Scale**” has been tested for reliability and validity. **SCB-SNS Scale** is a 21-item Likert scale with five factors, construing it to be a parsimonious scale. It is intended to provide practitioners a means, to track and measure intangible returns on their SNS investments and help fine tune organizational SNS strategy to generate optimal benefits. The scale is expected to help both academicians and practitioners measure and compare dimensions of social capital formation on SNS in diverse demographics and social settings and draw benefits therein.

LITERATURE REVIEW

Social Capital

Social capital is defined as sum of resources that result from the social structure [3]. Alternately, it is defined as a function of social structure producing advantage [6]. Social capital affects entrepreneurship, product innovation, formation of intellectual capital, resource exchange, employee relation and retention, learning, resource optimization, supply chain efficiency [1], R&D, customer relationship management, mergers and acquisitions [26] and firm competitiveness [27]; influencing strategic and operational dimensions of organizational strategy. For an individual, it helps job search [15], access to resources, extends social support and solidarity [34]. Social interaction [1] and social network structure [6] are two major dimensions of social capital formation. Sociologists view social interaction made up of actors acting in a social framework and actions governed by norms and rules [6]. To foster social capital, organizations need to encourage social interaction among stakeholders and facilitate it using collaborative technologies [1].

Social Capital is measured by tie strength [18]. Tie strength is classified as weak ties and strong ties. Weak ties are loose connections between people and are important as information conduits (Putnam, 2000), which lead to bridging social capital. Bridging social capital helps broaden social horizons with people from different life situations, opening up opportunities for more information and resources [34]. Strong ties, as seen between family members and close friends, lead to bonding social capital [16]. Bonding social capital provides reciprocity, strong emotional and substantive support, ability to mobilize solidarity [34] and access to scarce resources [16].

Pervasive Disruption Caused by SNS

Online SNS, such as Facebook, Twitter and LinkedIn [4], have garnered millions of active users worldwide. This caused a social turmoil, transforming the way in which people interact, collaborate and share information [20] [23], thus introducing new dynamics to social capital formation. Young individuals are embracing online SNS more compared to offline social networks, for reasons such as gratification provided by the impersonal nature of the environment [9], emphasizing the momentousness of the SNS phenomena and the transformative power of the medium. Online social networks sites help users maintain existing offline ties as well as form new ties [10]. SNS facilitates profile search to help people identify nodes with shared interests [34] that fosters richer interaction, incentivizing users to expand their social networks on these platforms. Network node traversal combined with profile definition on online SNS engenders wider network reach. SNS's ability to permeate physical and geographical boundaries to create solidarity renders it useful, not only in resource sharing and collaboration, but also in building trust in virtual work environments [8].

Scale to Measure Social Capital and Benefits on SNS

Internet Social capital Scale (ISCS) [34] was developed to measure social capital, comprising of bridging and bonding social capital constructs. ISCS measured social capital in offline social networks. Researchers working on SNS

[10] adapted ISCS scale to measure social capital in online SNS networks. A number of researchers have used modified ISCS scale to measure social capital generated in online settings (see table 1). These studies used bridging and bonding social capital constructs, and also found new factors of social capital. The wide adoption of the ISCS scale in academic research is an evidence of its acceptability. However, the scale was modified by each researcher, which indicates that the original scale is not directly usable to study social capital generated online. Firstly, there is lack of consorted effort to define a scale to measure benefits along with social capital in an organizational business context. The academic efforts are fragmented and focused to accommodate specific research needs. Secondly, the researchers did not focus on measuring business benefits emanating from social capital generated on SNS. This indicates an inadequacy in theoretically founded, adequately tested measurement instrument, motivating the researchers to define the SCB-SNS scale.

Table 1: Selected Literature on Measurement Social Capital for SNS

Ref	Sampling frame	SNS	Scale used
[11]	Undergraduate students	Facebook	Adapted from ISCS scale
[12]	US adults	Facebook	Modified ISCS scale
[19]	Twitter users	Twitter	Modified ISCS scale
[25]	Chinese students in 3 universities in Beijing	Renren	Modified ISCS scale
[30]	Students of an US university	Facebook	Adapted from ISCS scale
[31]	IBM employees	Beehive	Adapted from ISCS scale
[36]	Students at UNC-Chapel Hill	Facebook	Modified ISCS scale

Measuring business benefits from a specific organizational initiative is measured in terms of perceived benefits [21]. To measure perceived business benefits, this research adapted applicable constructs from an instrument initially used to measure business benefits emanating from website adoption [14].

Scale Definition

Several researchers developed scales to measure human attitude. The objective of developing a new scale or refining one lies in verifying convergent validity and discriminant validity of the scale by examining how the items sorted into construct categories [28]. Table 2 lists some scale definitions and refinement efforts by academic researchers.

Table 2: Selected Literature on Scale Definition and Refinement

Ref	Summary
[12]	Did EFA with PCA with varimax rotation for factor extraction followed by CFA to find association between constructs.
[13]	Applied EFA using PCA with oblique promax rotation followed by CFA for refinement, purification and validation of a scale.
[19]	Used PCA with oblimin rotation. Items were excluded to get factors with cleaner loadings for a parsimonious scale.
[24]	Applied EFA to eliminate extraneous items to get parsimonious scale.
[28]	Used EFA using PCA with varimax rotation for instrument reduction and refinement of a scale to measure perception on adoption of IT innovation.

METHODOLOGY

Data Collection and Sampling

To understand the social capital and business benefits generated on SNS, this study conducted a survey on working professionals. The research employed online survey method to collect data from working professionals in India using researcher controlled sampling [2]. Online surveys are location and time agnostic allowing participants the freedom to participate as per their convenience. It offers researchers the convenience of automated data collection [35], validation

and tabulation. Others researchers [20] too have conducted online questionnaire based survey for similar research. The survey was carried out using *Google Forms*. The survey also generated data pertaining to demographic profile and SNS usage of the respondents. Facebook, LinkedIn and Twitter sites were covered in the survey, as they were presently among the most popular SNS sites [32]. Survey responses were downloaded and checked manually for completeness and consistency.

Measurement Development

Social Capital: ISCS [34] measure bridging and bonding social capital using a 20-item Likert based scale (Table 3).

Table 3: ISCS Items

Code	Original Item
SCBo1	There are several people on SNS I trust to help solve my problems.
SCBo2	There is someone on SNS I can turn to for advice about making very important decisions.
SCBo3	There is no one on SNS that I feel comfortable talking to about intimate personal problems.
SCBo4	When I feel lonely, there are several people on SNS I can talk to.
SCBo5	If I needed an emergency loan of \$500, I know someone on SNS I can turn to.
SCBo6	The people I interact with on SNS would put their reputation on the line for me.
SCBo7	The people I interact with on SNS would be good job references for me.
SCBo8	The people I interact with on SNS would share their last dollar with me.
SCBo9	I do not know people in my SNS connections well enough to get them to do anything important.
SCBo10	The people I interact with on SNS would help me fight an injustice.
SCBr1	Interacting with people on SNS makes me interested in things that happen outside of my town
SCBr2	Interacting with people on SNS makes me want to try new things.
SCBr3	Interacting with people on SNS makes me interested in what people unlike me are thinking.
SCBr4	Talking with people on SNS makes me curious about other places in the world.
SCBr5	Interacting with people on SNS makes me feel like part of a larger community.
SCBr6	Interacting with people on SNS makes me feel connected to the bigger picture.
SCBr7	Interacting with people on SNS reminds me that everyone in the world is connected.
SCBr8	I am willing to spend time to support general SNS community activities.
SCBr9	Interacting with people on SNS gives me new people to talk to.
SCBr10	On SNS, I come in contact with new people all the time.

This research uses the original ISCS scale as the basis on which it performs EFA to exclude items to get factors with cleaner loadings for suggesting a more parsimonious scale.

Business Benefits: This research uses items related to three business benefit constructs, namely, operational, informational and strategic benefits. The three constructs have 33-item Likert based scale (Table 4). The questions were

adapted to start with “SNS helps in my work to:”

Table 4: Business Benefits Items

Code	Original Item
SB1	Provide new products or services to customers
SB2	Provide improved products or services to customers
SB3	Enhance competitiveness or create strategic advantage
SB4	Align well with stated organizational goals
SB5	Change the way the organization conducts business
SB6	Enable the organization to catch up with competitors
SB7	Help establish useful linkages with other organizations
SB8	Improve customer relations
SB9	Enhance the credibility and prestige of the organization
SB10	Enable the organization to respond more quickly to change
IB1	Enable easier access to information
IB2	Improve management information for strategic planning
IB3	Improve information for management control
IB4	Improve the accuracy or reliability of information
IB5	Present information in a more concise manner or better format
IB6	Enable faster retrieval or delivery of information or reports
IB7	Increase volume of information output
IB8	Increase flexibility of information requests
IB9	Facilitate organizational adherence to government regulations
IB10	Improve information for operational control
OB1	Allow other applications to be developed faster
OB2	Provide the ability to perform maintenance faster
OB3	Save money by avoiding the need to increase the workforce
OB4	Save money by reducing travel costs
OB5	Save money by reducing the workforce
OB6	Save money by reducing system modification or enhancement cost
OB7	Save money by reducing hardware use
OB8	Allow previously infeasible applications to be implemented
OB9	Increase return on financial assets
OB10	Enhance employee productivity or business efficiency
OB11	Speed up transactions or shorten product cycles
OB12	Save money by reducing communication costs
OB13	Provide greater data or software security

DATA DESCRIPTION

The survey was administered on 200 working professionals in India. Target respondents were privately invited through personal requests of which 135 responded. Around 2 responses were discarded due to incompleteness, leaving researchers with 133 valid responses; 9 responses indicated they were not using any of the three SNS sites, indicating that 6.77% of working professionals were either not using any SNS at all or preferred a SNS site other than Facebook, LinkedIn or Twitter. They were excluded from further analysis. Online administration of the survey ensured that there were no missing data. Table 5 depicts the demographic profile of survey respondents. Of the 124 SNS users considered in analysis, 80.6% preferred Facebook and 19.4% preferred LinkedIn. None of the respondents opted Twitter as preferred SNS platform. Median of SNS usage of SNS was 1 hour. Roughly 67% of respondents reported more than 500 connections, which agrees with findings in other studies that SNS help maintain a large number of connections [30].

Table 5: Profile of Respondents

Measure	Item	Percentage (%)
Gender	Male	72.7%
	Female	27.3%
Age	Less than 25	3.3%
	25 to 35	43.3%
	35to 45	37.5%
	More than 45	15.9%
Educational qualification	Bachelor's	35.5%
	Master's degree	62%
	Other	2.5%

Note: Above profile closely matches that observed in similar studies [5]

ANALYSIS

Item SB2 was removed for ambiguity with item SB1 [28]. Items OB1, OB5, OB6, OB7 and OB9 were removed due to non-applicability to SNS, leaving 28 items.

Findings

Exploratory Factor Analysis (EFA) was performed on the survey data for refinement of the social capital measurements (independent variable), and benefit generation (dependent variable) separately [17]. EFA was performed with SPSS 20 using Principal Component Analysis (PCA) with varimax rotation with Kaiser Normalization as extraction method. The data satisfied normality, linearity, homoscedasticity and multicollinearity.

Social Capital

Cross loadings resulted in elimination of 6 items [12] [19] [32] and 1 item was removed due to low loading. The analysis yielded 4 factors, with 4, 4, 3 and 2 scale items, respectively. The results are depicted in Table 6. The factor with two items was dropped due to poor loading, as good practice recommends minimum three items per factor [17]. The resultant 3 factors with 11 items provided an abbreviated and parsimonious set of items to study social capital. Items in factors 2 and 3 measured access to resources and support, all related to bonding social capital in original scale. However, factor 3 in this PCA comprised items related to scarce resources and money, while factor 2 corresponded with social support. Factor 1 constituted of items related to broadening social horizons on SNS. The researchers chose to name the factors 1, 2 and 3 as “broadening social horizons”, “social support” and “access to resources”, respectively.

Table 6: PCA of Social Capital Items

Item	Factor Loadings			
	F1	F2	F3	F4
SCBo1		.701		
SCBo2		.746		
SCBo3				.874
SCBo5			.794	
SCBo6			.774	
SCBo7		.711		
SCBo8			.847	
SCBo9				.719
SCBo10		.547		
SCBr5	.882			
SCBr6	.846			
SCBr7	.812			

Table 6: Contd.,				
SCBr9	.769			
KMO=0.892, Bartlett Test of Sphericity =0.000				
Total Variance Explained = 70.219%				

Business Benefits

Cross loadings resulted in elimination of 16 items [12] [19] [32]. PCA analysis yielded 3 factors, with 7, 3 and 1 items, respectively. The results are depicted in Table 7. The factor with one item was dropped due to poor loadings [17]. The resultant 2 factors with 10 items provided an abbreviated and parsimonious set of items to study business benefits. The factors corresponded with *operational* and *strategic* benefits, respectively.

Table 7: PCA of Business Benefit Items

Item	Factor Loadings		
	F1	F2	F3
SB1		.726	
SB3		.853	
SB6		.733	
IB7			.749
IB9	.724		
IB10	.691		
OB3	.779		
OB4	.729		
OB8	.743		
OB10	.682		
OB13	.776		
KMO=0.946, Bartlett Test of Sphericity =0.000			
Total Variance Explained = 70.752%			

Confirmatory Factor Analysis (CFA) (Figure 1) on the factors derived from PCA, showed good item loadings and covariances. Table 8 illustrates the goodness of fit measures for the model. The goodness of fit indicators showed that the construct validity of the model as acceptable [17] [32].

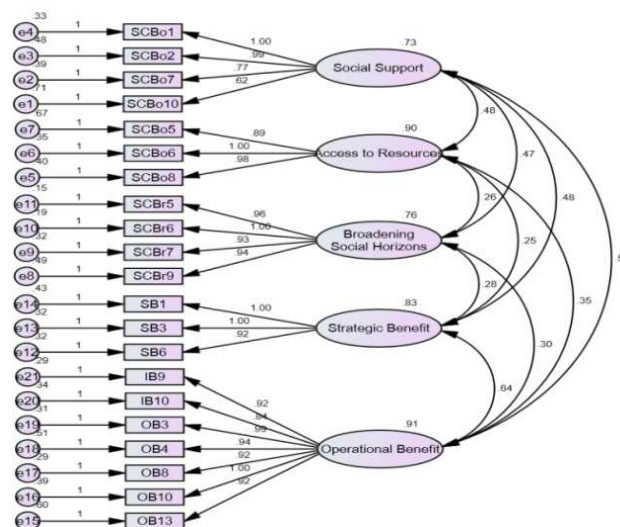


Figure 1: CFA Model with Loadings

Table 8: Goodness of Fit of CFA Model

Fit Indicator	Observed value
Chi-square/df	1.661
Chi-square p-value	0.000
RMR	0.073
GFI	0.819
AGFI	0.766
NFI	0.850
NNFI / TLI	0.921
CFI	0.933
RMSEA	0.073

Factor analysis on original ISCS scale items having two factors, in fact, yielded three factors. The “broadening social horizons” factor was of particular interest as it appears to be a phenomenon peculiar to SNS; supporting findings of previous studies that SNS helps create and maintain a large social network. *Secondly*, emergence of two distinct factors from ‘bonding social capital’ indicate that SNS platforms help strengthen solidarity in social networks. CFA on multiple split samples of the data confirmed the validity of the factors extracted, which indicates generalizability of the model factors.

Table 9: Validity and Reliability of Scale Constructs

Dimensions	CR	AVE	Alpha
Social Support	0.85	0.92	0.802
Access to Resources	0.86	0.74	0.841
Broadening Social Horizons	0.93	0.92	0.905
Strategic Benefit	0.89	0.95	0.868
Operational Benefit	0.94	0.87	0.934

IMPLICATIONS OF THE RESEARCH

The study presents a parsimonious scale with high reliability and validity to measure outcomes of SNS, an epochal phenomenon influencing human behavior, with far reaching societal and economic impact. The study involves a comprehensive review of available instruments to measure social capital and business benefits and their use in online social networking studies. Academicians can use the scale to measure and compare social capital and business benefits generated on SNS by different sections of human groupings. They can distinguish nature of business benefit, operational or strategic, generated through SNS. They can study the causal relations and interactions between the social capital factors and business benefit factors. Practitioners can use suggested **SCB-SNS Scale** for quantitative measurement of returns from SNS investments. They can understand relative importance of social capital factors in their population of interest and for business decisions.

CONCLUSIONS AND RECOMMENDATIONS

The **SCB-SNS Scale** introduces a new perspective to measure social capital, surpassing the social capital factors directly associated with tie strength. While most SNS studies have relied on student samples, present study is based on responses generated from professionals. This makes the **SCB-SNS Scale** more apt for use in business context. The scale can be used by researchers involved in empirical research on SNS. However, the scale suggested in present study needs to be validated on diverse samples. The **SCB-SNS Scale** attempts to bridge the gap identified in measuring benefits emanating from the social *tsunami* named SNS. It offers practitioners too an instrument which possess satisfactory

reliability and validity, to objectively measure and manage SNS strategy and investments.

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